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SCIENTIFIC NOTES AND NEWS

SIR J. J. THOMSON has been appointed by King George V. a member of the order of merit. The other scientific men who are members of the order are Lord Rayleigh, Dr. A. R. Wallace and Sir William Crooks. The order has recently lost through death Sir Joseph Dalton Hooker and Lord Lister.

DR. GEORGE T. MOORE has been elected director of the Missouri Botanical Garden to fill the vacancy caused by the resignation of Dr. William Trelease.

It is expected that the Peter Bent Brigham Hospital, now under construction on land adjoining the Harvard Medical School, will be completed in October, 1912. Dr. Henry A. Christian, retiring dean of the Harvard Medical School, will be physician-in-chief, Dr. Harvey Cushing, of the Johns Hopkins Medical School, surgeon-in-chief, and Dr. H. B. Howard, superintendent.

PROFESSOR ARTHUR SEARLE, Phillips professor of astronomy at Harvard University, has presented his resignation after a teaching service at the university of forty-two years. He graduated from Harvard in 1856.

PROFESSOR JEAN GASTON DARBOUX and Professor Elias Metchnikoff have been elected honorary members of the Royal Irish Academy in the section of science.

DR. JUST LUCAS-CHAMPIONNIÈRE has been elected a member of the Paris Academy of Sciences in succession to the late Professor Lannelongue.

THE council of the British Iron and Steel Institute has awarded the Andrew Carnegie Gold Medal of the Institute to Dr. Paul Goehre, the metallurgist of Aachen.

DR. C. L. SHEAR, pathologist in the Bureau of Plant Industry, has sailed for Europe to spend several months in the investigation of fruit diseases.

DR. J. E. POGUE, assistant curator of mineralogy, U. S. National Museum, has returned to Washington after a three months' research and study trip in Europe.

DR. HERBERT M. EVANS, of the Johns Hopkins Medical School, has been granted leave of absence to go abroad to work in the laboratory of Professor Ehrlich, at Frankfort, during the coming summer.

DR. DOUGLASS WILSON JOHNSON, of Harvard University, who has recently been appointed associate professor of physiography at Columbia University, is spending a half year in Europe.

DR. FRANK BILLINGS, professor of medicine at the University of Chicago, has been appointed to provide the details of the program for the section of epilepsy of the State Conference of Charities and Corrections to be held in Chicago next October.

MR. E. J. MCCAUSTLAND, professor of municipal engineering in the State University of Washington, has been appointed a member of the State Board of Health. Professor McCaustland has for three years acted in the capacity of consulting sanitary engineer to the board.

IN the preliminary list of papers to be presented at the eighteenth international congress of Americanists to be held in London, beginning on May 27, there are titles from the United States by Dr. Franz Boas, of Columbia University; Dr. A. Hrdlicka, of the U. S. National Museum; Dr. Charles Peabody, of Harvard University; Mr. Stansbury Hagar, of New York.

PROFESSOR JOSEPH P. IDINGS, of Washington, will deliver a course of lectures to the geological students of the Johns Hopkins University, on "The Problems of Petrographical Provinces." The lectures will be given during the last two weeks in April.

THE Rev. Caspar René Gregory, professor of theology in the University of Leipzig, has concluded a special course of lectures at Western Reserve University. The lectures included a series of six on the subject "Five Hundred Years of Science in Leipzig."

THE Society for Biological Research of the University of Pittsburgh held, on March 20, its second special meeting for the year 1911-12, at which time Dr. Robert Russell Bensley,

director of the Hull Anatomical Laboratories of the University of Chicago, gave an address on "The Structure of the Pancreas and its bearing on the Islet Theory of Diabetes."

THE twentieth "James Forrest" lecture will be delivered at the Institution of Civil Engineers on April 19, by Mr. H. R. Arnulph Mallock, F.R.S., his subject being "Aerial Flight."

SIR WILLIAM MACEWEN will give an address on Lord Lister at the meeting of the Royal Institution of Great Britain on Friday evening, June 7.

A PORTRAIT bust of the late Sir Joseph Hooker, from a sitting taken just before his death, has been completed by Mr. Pennachine.

THE funeral of Dr. Thomas H. Montgomery, Jr., professor of zoology in the University of Pennsylvania, was held on Friday, March 22, at St. Mary's Episcopal Church. The honorary pallbearers were: Provost Smith, of the University of Pennsylvania; ex-Provost Charles C. Harrison; Professor E. G. Conklin, of Princeton University; Professor G. H. Parker, of Harvard University; Professor J. P. Moore, of the University of Pennsylvania; Professor W. M. Wheeler, of Harvard University; Professor William R. Newbold, of the University of Pennsylvania; William S. Morris and Professor Philip P. Calvert, of the University of Pennsylvania.

DR. JAMES RUFUS TRYON, formerly medical director of the navy, retired with the relative rank of rear-admiral, has died at the age of eighty-two years.

THE late Lord Wandsworth has bequeathed over a million pounds to establish an orphanage and school; the will also contains a bequest of £10,000 for medical research.

MISS HELEN SWINDELLS, of Southport, has bequeathed £5,000 to the University of Manchester for cancer research, and £5,000 to the benevolent fund of the Institution of Civil Engineers.

THE John Hay Library at Brown University will be augmented by a collection of seven thousand volumes on engineering subjects,

the gift of Mr. Elmer L. Corthell, the hydraulic and waterways engineer. The gift of the Corthell Library, as it is to be known, carries with it an endowment fund of \$5,000.

A SERIES of prizes is offered by a member of the Torrey Botanical Club for the best popular article on some feature of the vegetation of the local flora range. The prizes will be as follows: (1) A first prize of \$25; (2) a second prize of \$15; (3) for the five next best articles, a year's subscription to *Torreyia*. (Offered by the club.) The competition is open to all amateurs, school teachers and others not on the staff of a botanic garden, college or university.

THE fifth session of the Graduate School of Agriculture will be held under the auspices of the Association of American Agricultural Colleges and Experiment Stations, at the Michigan Agricultural College, East Lansing, Mich., July 1-26, 1912. Director A. C. True, of the United States Office of Experiment Stations, will be dean of the school and the faculty, as usual, will consist of some of the leading scientific men from the United States Department of Agriculture, the American agricultural colleges and experiment stations, other American universities and European institutions. Two lecturers have been secured from England, Dr. A. D. Hall, of the Rothamsted Experiment Station, and Professor F. H. A. Marshall, Christ College, Cambridge University. This school is open only to college graduates who want to pursue advanced work in agriculture. Graduate courses will be given under the general head of soils and plant physiology, animal physiology, agronomy, horticulture, swine husbandry, poultry husbandry, beef and dairy cattle, rural engineering and rural economics. Among the more important topics that will be given consideration at this time are the part played by the soil solution in the nutrition of plants, the relation of the physiology of plants to the soil problem, colloids in relation to soil fertility and soil bacteriology, zootechnical problems in relation to the physiology of the cell, the physiology of reproduction and the biology of sex, plant production

problems in relation to plant breeding and adaptation, problems dealing with the transportation, handling and storing of fruit, rural sanitation, road making, rural social surveys and rural festivals as agencies for social contact.

THE department of electrical engineering of the Massachusetts Institute of Technology has under way an important investigation on the adaptability of electric vehicles for trucking purposes, more especially with reference to the conditions in Boston and its vicinity. Mr. H. F. Thomson, the research associate, in carrying on this work, is making substantial progress in the inquiry. The inquiry is directed along several particular lines, including cost of the service, convenience of the service, difficulties and expenses due to the delays in loading and unloading at freight houses and the like, delays caused by drivers, and corresponding matters. The railroads entering Boston are cooperating with the part of the investigation relating to time occupied in loading and unloading trucks at the freight houses, including the time occupied in getting to the loading platform. The freight house conditions are being investigated by students of the department under the direction of Mr. Thomson. An appropriation for this work was made to the institution by the Edison Electric Illuminating Company of Boston. The research was begun about the middle of the year 1911 and is expected to extend beyond the year. It is expected to result in a report or series of reports on the relative merits of electric vehicles, other mechanical vehicles and horse vehicles for city and suburban delivery, for trucking and for the other purposes for which vehicles are used in the city and its suburbs. The department has had erected in Brookline a 700 foot span of number two naught bare stranded wire to represent a transmission span on towers, and has had this span under observation during the severe weather of this winter. The object is to learn more exactly the effects of ice, sleet and wind loads, and of temperature effects on the stresses imposed upon the wire and its supports. This research is being carried on by two students under the

direction of Professor Harold Pender. There are now a larger number of candidates for advanced degrees in electrical engineering than the department has ever previously seen, and the various branches of research which are being carried on are being constantly enlarged. This is in addition to the extended undergraduate work for which the department is notable.

THE copper mines of the United States have produced more than fifteen and a quarter billion pounds of copper, and of this total twelve mining districts have produced in excess of 100,000,000 pounds each, according to the United States Geological Survey. These twelve districts, located in eight states, have yielded 94.69 per cent. of the total output of the country since 1845, when the total product of the United States was but little more than 200,000 pounds. These districts are Butte, Mont., which has yielded 5,315,000,000 pounds, or 34.75 per cent. of the total production; Lake Superior, Mich., which has yielded 4,756,000,000 pounds; Bisbee, Ariz., 1,285,000,000 pounds; Morenci-Metcalf, Ariz., 882,700,000 pounds; Jerome, Ariz., 570,000,000 pounds; Bingham, Utah, 465,000,000 pounds; Shasta County, Cal., 336,000,000 pounds; Globe, Ariz., 334,700,000 pounds; Ducktown, Tenn., 211,700,000 pounds; Ely, Nev., 125,000,000 pounds; the foothill belt, California, 104,000,000 pounds; and Santa Rita, N. Mex. (where mining is believed to have been begun as far back as 1800), 103,000,000 pounds. All other districts have produced 804,300,000 pounds. It is interesting to note that the first ten of these districts are also the first ten largest producers to-day, although the order is slightly changed. These ten districts yielded 93.84 per cent. of the production for 1910. The United States is by far the greatest copper-producing country, our smelter output of copper in 1910 being 56.75 per cent. of the total for the world. Nearly every one of the leading copper-producing districts of the United States, according to the Geological Survey, made a record output within the three years preceding 1910, and nearly every one of them could have done so in 1910 so far as the ability of the mines

to produce the ore was concerned. An indifferent copper market and metallurgical difficulties, however, resulted in a decrease in the output for 1910 for several districts. The Survey's estimate on January 2, 1912, indicates a copper output for 1911 greater than that of 1910 and nearly equal to the record production of 1909. It is further stated that most of the companies are now in a position to maintain or even increase their present output, so that, if the consumption of the metal will permit, the production of copper in the United States for 1912 may be expected to show a marked increase. It is noteworthy that not one of the leading copper districts of the United States, several of which have been active producers for 30 years or more, has been worked out or shown a decrease in its ability to produce copper.

UNIVERSITY AND EDUCATIONAL NEWS

AN anonymous gift of £100,000 has been made toward enabling the University of London to acquire a site north of the British Museum. The university has also received £60,000 from the Draper's Company for a senate house and administrative offices.

AN anonymous donor has undertaken to give £20,000 to the University of Cambridge, to establish a chair of genetics, to be called the Balfour professorship of genetics, in honor of Mr. A. J. Balfour.

THE nomination is announced of Dr. Edward H. Bradford, A.B. (Harvard, '69), professor of orthopedic surgery, to be dean of the Harvard Medical School.

PROFESSOR GEO. M. REED, of the University of Missouri, will have charge of the botanical work in the New York University during the summer session of 1912.

PROFESSOR H. A. WADSWORTH, of the department of forestry, University of Idaho, has resigned to accept a commission in the United States army. Mr. Erwin W. Cook, B.S. (Washburn), M.F. (Michigan), has been appointed instructor in forestry at the university. He has been forest assistant on the Salmon (Idaho) National Forest for the past two years.

DISCUSSION AND CORRESPONDENCE

PRINCIPLES OF WATER-POWER DEVELOPMENT

TO THE EDITOR OF SCIENCE: In presenting "Another View of the Principles of Water-Power Development,"¹ Professor Aldrich illustrates his idea of individual ownership of water in part by the pronouncement, "A man owns the water in his well, we all believe." He utterly ignores the case (occurring with increasing frequency as population and industrial use of water advance) in which the sinking of a larger or deeper well in the neighborhood robs the earlier well of its supply; and he equally ignores all other of those physical facts and relations concerning water which are of growing consequence and complexity as the uses of this primary resource increase and multiply.

Professor Aldrich illustrates his view of equity in the use of water by reference to power development at Shoshone Falls and Twin Falls, and declares that the only "part of the people" of the United States equitably interested in this use are "simply those who live within the range of power transmission, and are not more accessible to another source of power." He utterly ignores the paramount uses of water for domestic supply and the production of food; he ignores the patent fact that each year and each decade more and more of the water of Snake River is removed for these paramount purposes, and the certainty that within a generation practically all the water of Snake River valley will be consumed for these paramount purposes, leaving only a sufficient flow for natural sewerage with incidental power development and navigation; and he equally ignores the broad fact that "the people of Cape Cod, or of Washington, D. C.," who consume bread and beet sugar and other products of Snake River valley, have a most real interest in such utilization of the waters of that river as will best promote normal production and industrial development—i. e., as will best contribute to the general welfare. Perhaps the clearest indication of Professor Aldrich's no-

¹ SCIENCE, March 1, 1912, pp. 338-340.